

WHAT IS CLAIMED IS:

1. A WDM (Wavelength Division Multiplexing) optical transmission apparatus for outputting an optical signal having a plurality of channel signals over an external waveguide, comprising:

5 a light source for outputting incoherent light of a prescribed wavelength bandwidth;
 a circulator having first to third ports for outputting the incoherent light received at the first port coupled to the light source to the second port and for outputting an optical signal received at the second port to the third port coupled to the external waveguide;

 a WGR (Waveguide Grating Router) having a multiplexing port (MP) coupled to the
 10 second port of the circulator and a plurality of demultiplexing ports (DPs) for performing WD (Wavelength Division) demultiplexing on the incoherent light received at the MP to output WD-demultiplexed signals to the plurality of DPs and for performing WD multiplexing on a plurality of channel signals received at the plurality of DPs to output WD-multiplexed signals to the MP; and

15 a plurality of FB (Fabry-Perot) lasers respectively connected to the DPs of the WGR, each FP laser having a laser cavity, an antireflection coating layer deposited at one end of the laser cavity facing a corresponding DP, and a high reflection coating layer deposited at the other end of the laser cavity,

 wherein an optical injection efficiency increases and an influence of reflected light
 20 is reduced, resulting in facilitation of a wavelength-locked phenomenon.

2. The apparatus as set forth in claim 1, wherein the antireflection coating layer has a reflection rate of 0.1~30 %.

3. The apparatus as set forth in claim 1, wherein the FP lasers each output a wavelength-locked optical signal when a lasing mode having a wavelength equal to that of an injected incoherent light is found.

4. The apparatus as set forth in claim 2 wherein the high reflection coating layer has a reflection rate of 70~100 %.

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5. The apparatus as set forth in claim 3, wherein the FP lasers output an optical signal amplified by the injected light when there is no lasing mode having a wavelength equal to that of the injected incoherent light.

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6. The apparatus as set forth in claim 1, wherein the light source comprises an Amplified Spontaneous Emission (ASE) source for generating an incoherent light having a prescribed wavelength bandwidth.

7. The apparatus as set forth in claim 6, wherein said ASE comprises an Erbium Doped Fiber Amplifier (EDFA) for generating an ASE light.

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8. The apparatus as set forth in claim 7, wherein said EDFA comprises an erbium-doped fiber.

9. The apparatus as set forth in claim 8, wherein said EDFA further comprises a
5 pump laser diode for pumping the erbium doped fiber.

10. The apparatus as set forth in claim 1, wherein the first FP laser has a variation of about 0.1%nm/°C in wavelengths of lasing modes changing with temperature.

10 11. The apparatus as set forth in claim 10, wherein a wavelength-locked phenomenon occurs at an ambient temperature of about 31°C.

12. The apparatus as set forth in claim 11, wherein an optical amplification occurs at ambient temperatures of 25°C and 37°C.

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13. The apparatus as set forth in claim 3, wherein the n-th FP laser includes a laser cavity having a prescribed gain and an antireflection coating layer deposited at one end of the laser cavity facing the n-th DP.

20 14. The apparatus as set forth in claim 13, wherein said FP laser further includes a high reflection coating layer deposited at the other end of the laser cavity.

15. The apparatus as set forth in claim 14, wherein said FP laser noise immunity increases as its extinction ratio increases.

16. The apparatus as set forth in claim 3, wherein a 3-db line width of the incoherent
5 light corresponds to about 40% of a channel spacing of the WGR.

17. The apparatus as set forth in claim 3, wherein the light source further comprises
a semiconductor optical amplifier (SOA) to amplify an incoherent light.

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